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An Examination of IPO Performance in Canada's Manufacturing Industry

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Abstract

An Examination of IPO Performance in Canada's Manufacturing Industry

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This paper investigates the IPO price performance of Canada's manufacturing firms. We examine the theory and evidence on IPO activities: in the manufacturing sector based on first day of trading, and the long run IPO performance with respect to different benchmarks. The result shows that IPOs are underpriced in the initial issue period. However, the IPO performance which relative to S&P/TSX composite index confirms that it is overpriced in the long run, while the performance which relative to Dow Jones Industrial average index shows the IPO is underprice.

Contents

List of Tables

Chapter Ⅰ

Introduction

1.1 Background

The initial public offerings (IPOs) of firm's common stock can be commonly referred to as security is sold to the general public for the first time. Usually the security can be of any debt or equity, but this paper will mainly focus on the equity aspect.

From decades ago, thousands of companies have gone public over the world. Previous empirical research found that the major concern with pricing of IPOs is significantly underpricing, which means the closing price of a new issued stock at the first trading day is often higher than the offer price. Some scholars pointed out in their researches that IPOs are often underpriced may be caused by the liquidity and uncertainty of the level at which the security will trade. The less liquid and less predictable the shares are, the more underpriced they will have to be in order to compensate investors for the risk they are taking. Because an IPO's issuer tends to know more about the value of the shares than the investor, a company must underprice its stock to encourage investors to participate in the IPO.

Numerous studies show that three major anomalies in the pricing of IPOs of common stock: (1) the (short-run) underpricing, (2) the "hot issue" market, and (3) the long-run underperformance.

The Canadian manufacturing sector covers 21 industry groups that produce goods for both industrial and consumer use. The manufacturing sector's activity is monitored monthly and annually, as it accounts for a large part of Canada's Gross Domestic Product. However, recently news shows that (David Parkinson, June 14, 2013):

"The manufacturing sector remains the weak link in Canada's economy, and the latest monthly report from the beleaguered industry suggests the clouds are far from parting: Manufacturing sales slumped 2.4 per cent on a seasonally adjusted basis in April, the biggest drop since August, 2009. It was the fourth decline in five months; the sector hasn't shown any discernible growth in the better part of two years."

Manufacture has a vital role in Canada's economy. In addition, because of the situation that manufacturing industry declined for years, people may wonder whether manufacture industry IPOs have a negative influence on the Canadian IPOs average return. Therefore, the paper will devote to examining the IPO underpricing phenomenon for 3 years after the issue day. It will try to figure out if there is relationship among severities of IPO performance, the manufacturing industry, and IPOs return in Canada.

1.2 Purpose of Study

The purpose of this paper is mainly focus on how IPOs price performance in the long run in manufacturing industry. Compare with the short-term IPOs performance, evaluating the long-term performance of IPOs in a specific industry to see whether there is any featured characteristic in a special industry in Canada and whether it affects the Canadian IPOs average return.

1.3 Limitations

This paper examines the short-term and long-term performance of IPOs in Canada manufacture industry. However, the industrial classification is not so clearly when we search for the data sources. We uses firms under “industrial” and “materiel” category, which also meet our study purposes that to find out the manufacture industry specification in IPO market since the material is also an important part of the manufacture industry. In addition, due to the data limitation, we cannot adjust IPOs return by different benchmarks and also the matching firms' return. The last limitation is that we only exam the manufacture industry in this paper, so we do not have enough information to compare with other industries so that to see if there is any industrial specification characteristics.

1.4 Structure of this paper

The structure of this paper is arranged as follows: Chapter 1 is focus on the background of IPOs, some data, and main purpose of this study. The next chapter will overview the literatures and provides some ideas related to this topic. Chapter 3 presents the details of this study methodology and data resources. Chapter 4 provides the result of empirical analysis. Chapter 5, the final one, will give the summary and recommendations about this topic.

Chapter Ⅱ

Literature Review

2.1 Rise of IPOs

When a firm considering raise finance from public, the first choice comes into their mind is IPO. IPO firms principally came into the market after 1970, but only a few firms took IPO process in a sample of 682 IPO firms found only twelve IPOs that were issued before 1980 (Jain and Kini, 1994). Industry professionals offer many reasons why private firm want to go public. IPO can be used to raise capital for expansion of the firm, increase liquidity for the shareholders, and improve reputation of the firm and to create valuable currency which indicates the stock (Draho, J., 2004). As Tim Jenkinson (Jenkinson, T., & Ljungqvist, A., 1996) stated, whether to go public is an important decision in the life cycle of a firm. In this case, IPO is a main approach to sell their shares to investors.

2.2 Underpricing of IPOs

"Pricing an IPO is always a function of the valuation," says Charles J. Kaplan, president of Equity Analytics. "That's what you have to determine first."

As showed in data, over three years, the average IPO underperformed the CRSP value-weighted market index by 23.4 percent from 1980 to 2001 (Ritter J., 2002). In addition, the degree of underpricing was changing severely over the time. It showed that the average first-day return on IPOs was 7% in the 1980s, while the average first-day return doubled to almost 15% during 1990 to 1998. Especially during the “dot-com” bubble, IPO underpricing reached to a highest level about 65% average first-day

return (Tim L. & Ritter J., 2004). Underpricing of IPOs seems to become a common phenomenon when firms become public for the first time. One rational behind IPO underpricing could be attributed by asymmetric information. Rock (1986) wrote in his article that there are two types of investors existing in the market: one is informed investor, and the other one is uninformed investor. It is said that informed investor may acknowledge more information about a security or a firm's intrinsic value, and they would invest only in underpriced securities to get more profit. Uninformed investors who only have public information, on the contrary, will bid on both underpriced and overpriced securities as they do not know the intrinsic value of each security. Thus, underwriters often underprice the IPOs to keep those uninformed investors participation in the market.

2.2.1 Short run under-performance

In terms of short-term performance in IPOs, the IPOs showed significant positive average first-day return. The underpricing of IPOs could vary from country to country and it is an essential for a company's life circle. . In the UK, Dimson (1979), Buckland et al. (1981), and Levis (1993) indicate average first day returns ranging from 8.5% to 17%. Internationally, Loughran et al. (1994) showed significant underpricing for 28 countries. Loughran et al. (1994) showed that average initial return can be only 4.2% for French IPOs and surprisingly high, 80%, for Malaysian IPOs. Several studies concluded that, on average, short-run returns are less positive for those IPOs that are brought to the market by more prestigious underwriters n (Beatty and Ritter, 1986; Johnson and Miller, 1988; Carter and Manaster, 1990; Booth and Chua, 1996; Nanda and Yun, 1997; Carter, Dark and Singh, 1998)

2.2.2 Long run under-performance puzzle

Statistics showed that IPOs underperformed in the long run (Ritter, 1991; Longhran & Ritter, 1995; Ritter & Welch, 2002). During 1975 to 1984, every dollar invested in a portfolio of IPOs which purchased at the closing price on the first trading day would have a terminal wealth of $1.3447 after buy-and-hold for three years, while every dollar in the matching firm would result in $1.6186 (Ritter, 1991).

However, conversely, Brav and Gompers (1997) investigated the long-run underperformance of IPO firms for both nonventure-backed IPOs and venture-backed IPOs using equal-weighted return. They found that venture-backed IPOs did not significantly underperformed while the smallest nonventure-backed IPOs did.

There are much more articles published academic studies to examine the performance of IPOs. Stoll and Curley (1970) found that in the short run, the stocks in the sample of 205 small offers showed a high price appreciation. Conversely, in the long run, the small firms seemed operate not so well. Ritter (1991) believed that possible explanations for this poor performance maybe caused by: first, risk mismeasurement; second, bad luck; or third, fads and overoptimism. In addition, IPOs in Finland, Germany, Spain and South Africa have experienced unsatisfying long-run performance, as in the USA (Lee et al., 1996; Keloharju, 1993; Ljungqvist, 1997; Alvarez and Gonzalez, 2005; Page and Reyneke, 1997). The long-run performance of IPOs is considered as a puzzle.

On the other hand, IPOs in emerging markets such as Malaysia and Thailand have been shown that in the long run they outperforming the market (Corhay et al., 2002; Allen et al., 1999).

In conclusion, in the long term view, the performance of IPOs remains uncertainty since it varies from country to country and the small size firms' IPOs are

different from that the large ones. When referring to the rationale behind this, Ritter gave three most detail explanations based on the research of Shiller (1990) which conduct a test on "fad" explanations.

2.3 Market efficiency hypotheses

The performance theory, especially in terms of long run performance, was based on the efficient market hypothesis (EMH). It is assumed that the market is efficient which refers to the stock prices adjusted to new information released into the market immediately and accurate. The stock price should reflect all information available in the market (Fama, 1970). Bossaerts and Bondarenko (2000) derived a weak form of market efficiency and named it "Efficiently Learning Market (ELM)". This ELM seemed to be a reasonable rational behind IPO market. Bossaerts and Hillion (2001) presented that under the ELM, the IPO long-run anomalies are no longer observed. They noticed that if investors could efficiently learn from the market, the IPO long-run underperformance in the USA was no longer exists. However, one main problem of this ELM theory is that how could an investor learn from the market efficiently?

2.4 Information asymmetry hypotheses

One of the best-known rational behind IPO underpricing is perhaps the asymmetric information. Rock's (1986) winner's curse about informed investors and uninformed investors should be the most convincing and reasonable model of asymmetric information.

Furthermore, many researches have been done after Rock. Beaty and Ritter (1986) showed a relationship between the IPOs discount rate and IPO uncertainty. They pointed

out that the higher uncertainty about an IPO, the greater that investors would cost to access the information, and the discount rate of the IPO would go up. Researches showed that most countries support this extended theory on this assumption in this view. Therefore, it becomes one of the most definite explanations in IPOs discount theories. Beatty and Ritter also raised an interesting text: an investor who wants to engage in information production implicitly invests in a call option on the IPO. When she/he thinks the 'true' price (the offering price of this IPO) exceeds the strike price, she/he will exercise this call option. When the value of this call option increases in the extent of uncertainty, more investors will become informed. Thus, the necessary of underpricing is required, and then if enough investors become informed, the winner's curse would presumably disappear.

2.5 Agency theory

When a firm goes public, they need an agency act on their behalf to help them apply and determine price. Thus, when an agency involved in, the cost of agency and the reputation of the underwriter must be considered. Agency theory is concerned with resolving problems that can exist in agency relationships; that is, between principals (such as shareholders) and agents of the principals (the underwriters). The two problems that agency theory addresses are:

1) The problems that arise when the desires or goals of the principal and agent are in conflict, and the principal is unable to verify (because it difficult and/or expensive to do so) what the agent is actually doing;

2) The problems that arise when the principal and agent have different attitudes towards risk. Because of different risk tolerances, the principal and agent may each be inclined to take different actions.

Jensen and Meckling (1976) thought the total agency cost was made of three proportions, which were investors' monitor cost, residual loss and management fee. Baron (1982) put forward the agency theory, as the underwriters of investment banking with information about the capital markets and distribution pricing. The goal of a firm to go public is to raise more capital, while underwriters need to maximize the underwriting fees and depress the issuing price. When the issuer is difficult to monitor the behaviour of the agent, they could improve the success rate of underwriting activities by IPO underpricing.

Furthermore, after a further study about the relationship between agency (underwriters or investment institution), Loughran and Ritter (2002) believed that underwriters may intend to lower the price so that they could sell those shares to their benefit customers, and obtain more money.

Chapter Ⅲ

Methodology and Data

3.1 Data source

The sample data of this paper is comprised of 571 initial public offerings from January 1st, 1999 to December 30th, 2009 meeting following criteria:

1) All of the IPO firms are listed in the exchange of Canada during the period of 1999 to 2009,

2) Each sample firm should have the details about IPO, e.g., offering price, offering data, closing price of first trading day, and at least 1 year stock price after IPO,

3) An offer price of CAD 1.00 per share of more,

4) Industry classification in Bloomberg: industrial and material,

5) The offering involved equity stocks only

In order to achieve the objective of this study we select data which specifics of each offering firms including the offering date, the volume of IPO issued, the offering price, firm size, the first-day closed stock price and average monthly stock price after IPO. All of the information can be easily found in Bloomberg and S&P Capital IQ.

According to the standards and data available for study, the actual number of firms used in this paper is 86 (see in details in Appendix A).

3.2 Methodology

The table below shows that IPOs have underperformed other firms of the same size (market capitalization) by an average of 3.3% per year during the five years after issuing, and not including the first-day return. The underperformance relative to other firms of the same size and book-to-market ratio has average 1.8% per year. This evidence indicates that the aftermarket performance is also underperformance as the short-term performance. The short run underperformance has been studied in details in many researches. In this paper, thus, the long-term performance of IPOs will be mainly focused on.

Table 3.1
Percentage returns on IPOs from 1970-2011 during the first five years after issuing

	First six months	Second six months	First Year	Second year	Third year	Fourth year	Fifth Year	Geometric Mean years 1-5
IPO firms	5.9%	0.4%	6.6%	5.0%	10.7%	18.7%	12.4%	10.6%
Size-matched	5.2%	5.6%	11.4%	13.2%	14.3%	16.9%	14.0%	13.9%
Difference	0.7%	-5.2%	-4.8%	-8.2%	-3.6%	1.8%	-1.6%	-3.3%
No of IPOs	8,464	8,436	8,464	8,513	7,787	6,958	6,167	
IPO firms	6.3%	0.7%	7.4%	6.8%	11.7%	18.4%	11.0%	11.0%
Size & BM-Matched	3.9%	4.7%	9.0%	12.5%	11.5%	18.3%	13.1%	12.8%
Difference	2.4%	-4.0%	-1.6%	-5.7%	0.2%	0.1%	-2.1%	-1.8%
No. of IPOs	8,278	8,250	8,278	8,130	7,392	6,565	5,797	

Sources: http://bear.warrington.ufl.edu/ritter/IPOs2012-5years.pdf

As the following table, it includes 25 original countries which show the long run average return of each country. The evidence shows that among all the developed countries, IPOs return in Canada is obviously lower than any others. Canada is said to be the one of the strongest western countries and have good relationship with the United States. In 2008, almost all the developed countries suffered from the financial crisis, but in Canada researches showed that Canada's finance did well during that

time. However, the IPOs' returns show that the weighted average initial return is low.

Table 3.2 Equally weighted average initial returns for 50 countries

Country	Source	Sample Size	Time Period	Avg. Initial Return
Argentina	Eijgenhuijsen & van der Valk	20	1991-1994	4.4%
Australia	Lee, Taylor & Walter; Woo; Pham; Ritter	1,562	1976-2011	21.8%
Austria	Aussenegg; Ritter	102	1971-2010	6.3%
Belgium	Rogiers, Manigart & Ooghe; Manigart DuMortier; Ritter	114	1984-2006	13.5%
Brazil	Aggarwal, Leal & Hernandez; Saito; Ushisima	275	1979-2011	33.1%
Bulgaria	Nikolov	9	2004-2007	36.5%
Canada	Jog & Riding; Jog & Srivastava; Kryzanowski, Lazrak & Rakita; Ritter	696	1971-2010	6.7%
Chile	Aggarwal, Leal & Hernandez; Celis & Maturana; Ritter	65	1982-2006	8.4%
China	Chen, Choi, & Jiang; Jia & Zhang	2,102	1990-2010	137.4%
Cyprus	Gounopoulos, Nounis, and Stylianides; Chandriotis	73	1997-2011	20.3%
Denmark	Jakobsen & Sorensen; Ritter	164	1984-2011	7.4%
Egypt	Omran	53	1990-2000	8.4%
Finland	Keloharju	162	1971-2006	17.2%
France	Husson & Jacquillat; Leleux & Muzyka; Paliard & Belletante; Derrien & Womack; Chahine; Ritter; Vismara	697	1983-2010	10.5%
Germany	Ljungqvist; Rocholl: Ritter; Vismara	736	1978-2011	24.2%
Greece	Nounis, Kazantzis & Thomas; Thomadakis, Gounopoulos & Nounis	373	1976-2011	50.8%
Hong Kong	McGuinness; Zhao & Wu; Ljungqvist & Yu; Fung, Gul, and Radhakrishnan; Ritter	1,259	1980-2010	15.4%
India	Marisetty and Subrahmanyam; Ritter	2,964	1990-2011	88.5%
Indonesia	Suherman	410	1990-2012	25.7%
Iran	Bagherzadeh	279	1991-2004	22.4%
Ireland	Ritter	31	1999-2006	23.7%
Israel	Kandel, Sarig & Wohl; Amihud & Hauser; Ritter	348	1990-2006	13.8%
Italy	Arosio, Giudici & Paleari; Cassia, Paleari & Redondi; Vismara	273	1985-2009	16.4%
Japan	Fukuda; Dawson & Hiraki; Hebner & Hiraki; Pettway & Kaneko; Hamao, Packer, & Ritter; Kaneko & Pettway	3,136	1970-2011	40.2%
Jordan	Al-Ali and Braik	53	1999-2008	149.0%
Korea	Dhatt, Kim & Lim; Ihm; Choi & Heo; Mosharian & Ng; Cho; Joh; Ritter	1,593	1980-2010	61.6%
Malaysia	Isa; Isa & Yong; Yong; Ma	413	1980-2009	62.6%

Country	Source	Sample Size	Time Period	Avg. Initial Return
Mauritius	Bundoo	40	1989-2005	15.2%
Mexico	Aggarwal, Leal & Hernandez; Eijgenhuijsen & van der Valk	88	1987-1994	15.9%
Netherlands	Wessels; Eijgenhuijsen & Buijs; Jenkinson, Ljungqvist, & Wilhelm; Ritter	181	1982-2006	10.2%
New Zealand	Vos & Cheung; Camp & Munro; Ritter	214	1979-2006	20.3%
Nigeria	Ikoku; Achua	114	1989-2006	12.7%
Norway	Emilsen, Pedersen & Saettem; Liden; Ritter	153	1984-2006	9.6%
Philippines	Sullivan & Unite; Ritter	123	1987-2006	21.2%
Poland	Jelic & Briston; Woloszyn	309	1991-2012	13.3%
Portugal	Almeida & Duque; Ritter	28	1992-2006	11.6%
Russia	Ritter	40	1999-2006	4.2%
Saudi Arabia	Al-Anazi, Forster, & Liu	76	2003-2010	264.5%
Singapore	Lee, Taylor & Walter; Dawson; Ritter	591	1973-2011	26.1%
South Africa	Page & Reyneke; Ali, Subrahmanyam & Gleason; Ritter	285	1980-2007	18.0%
Spain	Ansotegui & Fabregat; Alvarez Otera	128	1986-2006	10.9%
Sri Lanka	Samarakoon	105	1987-2008	33.5%
Sweden	Rydqvist; Schuster; de Ridder	374	1980-2011	27.2%
Switzerland	Kunz,Drobetz, Kammermann & Walchli; Ritter	159	1983-2008	28.0%
Taiwan	Chen	1,312	1980-2006	37.2%
Thailand	Wethyavivorn & Koo-smith; Lonkani & Tirapat; Ekkayokkaya and Pengniti	459	1987-2007	36.6%
Turkey	Kiymaz; Durukan; Ince; Kucukkocaoglu	355	1990-2011	10.3%
United Kingdom	Dimson; Levis	4,877	1959-2011	16.1%
United States	Ibbotson, Sindelar & Ritter; Ritter	12,340	1960-2012	16.8%

Sources: http://bear.warrington.ufl.edu/ritter/Int.pdf

3.2.1 Short run performance of IPOs

There are three formulas can be applied to determine the performance of IPOs in the short run.

1) Degree of underpricing

$$\text{DUP} = (P_{1i} - P_{0i})/P_{0i}$$

where P_{1i} is the closing price of stock i in the first trading day

P_{0i} is the offering price of stock i

2) Adjust degree of underpricing by average. This method obtains the stock price

for a short period to examine the short run performance. The equation is defined as follow:

$$\text{DUP} = \frac{P_{ni} - P_{0i}}{P_{0i}}$$

where P_{ni} is the average of closing price of stock i after IPO, n is observed days

P_{0i} is the offering price of stock i

3) Net degree of underpricing. This method eliminates the effect of market overall revenue level from initial rate of return.

$$\text{ADUP} = \frac{P_{1i} - P_{0i}}{P_{0i}} - \frac{L_{1i} - L_{0i}}{L_{0i}}$$

where P_{1i} is the closing price of stock I in the first trading day

P_{0i} is the IPO offering price

L_{1i} is the closing S&P/TSX index in the first trading day of stock i

L_{0i} is the last trading day's closing index of S&P/TSX before IPO of stock i

If ADUP>0, it means this security is underpricing

If ADUP<0, it means this security is overpricing

If ADUP=-0, it means this security is correct priced

In this paper, formula 3 will be used. Using similar formula can eliminate the effect of market overall revenue level from initial rate of return. Furthermore, as we need to compare the short run and long run IPOs performance, using same formula would be appropriate for us to see the difference and be more convincing.

The abnormal return in the short run arithmetic average of the net degree of

underpricing

$$\text{AR} = \frac{1}{n}\sum_{i=1}^{n} ADUP_i$$

where AR is the abnormal return, n is the sample size

If AR>0, the sample firm we examined are underpricing in the short run

If AR<0, the sample firm we examined are overpricing in the short run

If AR=0, the sample firm we examined are fairly priced in the short run

3.2.2 Long run performance

To evaluate the long-run performance of IPOs, two methods are used as follow:

1) Cumulative average adjusted returns (CAR) calculated with the monthly return after issue-day

The benchmark-adjusted return for stock i in event month t is defined as:

$$ar_{it} = r_{it} - r_{mt}$$

where $r_{it}$is the return of stock i in the month t

r_{mt} is the market return in the month t

The average benchmark-adjusted return on a portfolio of n stocks for event month t is the equally weighted arithmetic average of the benchmark-adjusted returns:

$$AR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it}$$

The cumulative benchmark-adjusted aftermarket performance from event month q to event month s is the summation of the average benchmark-adjusted returns.

$$CAR_{q,s} = \sum_{t=q}^{s} AR_t$$

If CAR>0, it means the sample firm is underpricing in the long run

If CAR<0, it means the sample firm is overpricing in the long run

For those firms who were delisted within 3 years, the return for both IPO and the benchmark only includes the days from the start of the month until the delisting day.

(2) 3-year buy and hold returns for both the IPOs and peer firms.

As the above formulas adjust the market return, which implicitly assumes monthly portfolio rebalancing, the 3-year buy-and-hold method can simply indicate the return of the stock without rebalancing.

Using formula to compute 3-year holding period returns:

$$R_i = \prod_{t=1}^{36}(1 + r_{it})$$

where r_{it} is the raw return on firm i in event month t.

To interpret this 3-year total return, compute wealth relatives (WR) as a performance measure:

$$WR = \frac{1 + average\ 3\ year\ total\ retrun\ on\ IPOs}{1 + average\ 3\ year\ total\ return\ on\ matching\ firms}$$

If WR>1, it is interpreted as IPOs outperforming a portfolio of matching firms

If WR<1, it indicates that IPOs underperformed a portfolio of matching firms

Chapter Ⅳ

Results and Analysis

4.1 Summary of data

Table 4.1 shows the summary of the data. From the table, we can see the sample firms issued their IPOs in Canada from 1999 to 2009. In 2004 and 2007, there were 17 and 16 manufacture firms who issued IPOs in Canada. From the mean dollars per issue of each IPO, we can say that the more IPOs issued every year and the more average offer size per issue, the market is more "hot". The table indicates that in 2002 and 2004, IPOs offered a larger size than any other years.

Table 4.1 Distribution of Manufacturing IPOs, 1999 to 2009

Year	Number of IPOs	Total Issued (CAD millions)	Mean per issue (CAD million)
1999	4	452.2	113.05
2000	4	109.38966	27.237415
2001	2	132.668	66.334
2002	11	6550.20191	595.4729
2003	2	15.325	7.6625
2004	17	7038.72016	414.0424
2005	11	905.55605	82.323277
2006	13	653.4503	50.2654
2007	16	1934.2275	120.88922
2008	6	200.9256	33.4876

4.2 Results and Analysis of short run IPOs

Table 4.2 shows the adjusted degree of underpricing for the sample stock in the IPO first trading day. Here we used the closing price on the first trading day of each stock to calculate the first day return and used S&P/TSX Composite as a benchmark to adjust the return. From the table we can see that the many ADUPs of firms are larger than zero, which mean that the IPOs of those firms were underpriced. The average abnormal return is 0.009893563, which is a little bit higher than zero and means the sample firms of Canadian manufacturing industry are underpriced in the initial public offering day. However, the result indicates that the underpriced of those sample firms is not significant. This may probably have following rational

1) Underwriter price support plays a significant role, which assumes that a deliberate decision is made by either the issuer or the underwriter to set the price below the true expected market value.
2) Based on previous study, it showed that small offering size firms' IPOs were less underpriced than those large offering size firms. In this paper, less than 25 percent of the total samples are large offering firms. Thus, the small offering size may attribute to this insignificant under-pricing.

Table 4.2 Adjusted Degree of underpricing of 86 sample firms

Issuer Ticker	ADUP	Issuer Ticker	ADUP	Issuer Ticker	ADUP	Issuer Ticker	ADUP
0005744D CN	0.043013	CAO CN	-0.267649	GDI CN	-0.004134	PKL CN	0.053366
0465270D CN	0.008201	CAO CN	-0.267649	GIF-U CN	-0.001221	PLS CN	0.004758
0682906D CN	-0.015665	CG CN	-0.011989	GNV CN	0.079946	QUX CN	-0.052940
0746636D CN	-0.040251	CHE-U CN	0.034574	GWW/H CN	-0.021372	RME CN	0.003716

0750327D CN	0.256300	CJT CN	0.009277	HNZ/A CN	-0.048225	SBR CN	-0.085710
2294981Q CN	0.036329	CMJ CN	0.494537	IBG CN	0.021817	SCM CN	-0.066899
3371363Q CN	-0.081929	COP CN	-0.010118	INV CN	0.023693	SDC CN	-0.004954
4124028Q CN	-0.976955	CSS CN	0.037555	LH CN	-0.003841	SXP CN	0.007892
8161730Q CN	0.008783	CUM CN	0.128939	LIV-U CN	0.018829	TBG CN	-0.014740
8372702Q CN	0.075087	CUS CN	0.010420	MCH CN	-0.058239	TFI CN	-0.023108
8766167Q CN	-0.077126	DFE CN	-0.042875	MSV CN	-0.016214	TL CN	0.071891
9505429Q CN	0.033912	DGC CN	0.052786	MTO CN	0.091244	TMA CN	0.146341
ADN CN	-0.007647	DNK CN	0.046282	MTP CN	-0.118870	TRK-U CN	-0.006173
AFN CN	0.003176	DPI-U CN	-0.003972	MUN CN	0.883543	TSL CN	-0.029698
AIN-U CN	0.009067	DRX CN	0.002528	NCF-U CN	-0.021298	TVK CN	-0.006271
ARF CN	0.008427	FBK CN	0.098283	ND CN	0.099067	UWE CN	-0.004431
ATS-U CN	-0.014395	FCC CN	-0.061090	NIF-U CN	-0.001134	VNP CN	0.865383
AVC CN	0.548696	FMA/H CN	-0.005910	OFB-U CN	-0.033531	WM CN	0.058915
AXR CN	0.261333	FNV CN	0.002333	OGD CN	-0.004683	WMK/H CN	-0.025377
BIN CN	-0.036484	FTP CN	0.001910	OPM CN	0.002109	WPX CN	-0.182532
BTO CN	-0.048392	GBY-U CN	0.018849	PBB-U CN	0.001287	XBC CN	-0.012311
XOR CN	-1.003398	XTX CN	0.007849				

*AR= 0.009893563

4.3 Results and Analysis of long run performance

4.3.1 Using S&P/TSX Composite Index

In this paper, 3 year is set as a standard to examine the long term performance of

IPOs of Canada manufacturing industry. Thus, I divided 3 years into 36 periods and in each period the benchmark-adjusted abnormal return is showed as follow Table 4.3

Table 4.3.1 S&P/TSX Composite Index adjusted return of sample firm in each period

AR1	AR2	AR3	AR4	AR5	AR6	AR7	AR8	AR9	AR10	AR11	AR12
-0.00926	-0.01456	0.014064	-0.00466	-0.01827	-0.02477	0.005045	0.004284	-0.01293	-0.01353	-0.01061	-0.01577
AR13	**AR14**	**AR15**	**AR16**	**AR17**	**AR18**	**AR19**	**AR20**	**AR21**	**AR22**	**AR23**	**AR24**
0.019668	0.024942	-0.03130	0.004254	-0.00077	0.023176	0.025442	-0.00400	-0.02893	0.015414	0.011456	-0.00450
AR25	**AR26**	**AR27**	**AR28**	**AR29**	**AR30**	**AR31**	**AR32**	**AR33**	**AR34**	**AR35**	**AR36**
0.017332	0.009517	-0.02101	-0.00362	0.027276	0.008394	-0.02012	0.009351	-0.03541	-0.03357	-0.00950	-0.83651
CAR= - 0.933969359											

As we can see from the table, most abnormal returns are negative, and the cumulative benchmark-adjusted return is -0.933969359. The negative sign means the manufacture firms' IPOs between 1999 and 2009 are overpriced in the long run. Ritter (1991) said in his article that there are several reasons which make the IPOs long-run performance overpricing: first, the existence of price patterns may create opportunities for those investors to generate excess returns by using active trading strategies; second, researchers want to find out the market timing abilities of the issuers by looking for the relationship between the high volume of the IPOs and its long-run performance, since some founding indicates that the volume of IPOs change significantly over time.

4.3.2 Using Dow Jones Industrial Average Index

Dow Jones Industrial Average is a popular index which is widely used by many financial specialists to calculate the return, beta, and some other financial information. Here, in this paper, I use this index, whose prices have already changed into Canadian dollars, to examine the Canada manufacturing IPOs' return. The following table shows the results of each firm's abnormal return.

Table 4.3.2 Dow Jones Industrial Average Index adjusted abnormal return

AR1	AR2	AR3	AR4	AR5	AR6	AR7	AR8	AR9	AR10	AR11	AR12
1.935672	2.298447	-0.11603	0.649152	0.553939	0.828605	6.075368	1.51272	0.479997	1.439326	1.383525	4.081713
AR13	**AR14**	**AR15**	**AR16**	**AR17**	**AR18**	**AR19**	**AR20**	**AR21**	**AR22**	**AR23**	**AR24**
2.419663	2.029223	1.082763	2.693687	2.703046	2.578921	1.526522	1.124131	1.496392	0.905798	2.464912	0.920047
AR25	**AR26**	**AR27**	**AR28**	**AR29**	**AR30**	**AR31**	**AR32**	**AR33**	**AR34**	**AR35**	**AR36**
1.189286	0.848998	2.681254	1.79966	1.679063	2.555679	2.06978	3.398384	1.851647	2.36354	4.127777	1.062448
CAR=1.90819595161476											

As we can see from this table, the abnormal return is positive for every firm and some are even more than 2.00. Also, the cumulative abnormal return is approximately 1.908, which is opposite to the S&P/TSX composite index adjusted cumulative abnormal return. It means that the Canada manufacturing IPOs underperformance over the Dow Jones Industrial Average in the long term. Why this situation happens? This could be the following reasons:

1) S&P/TSX composite index includes almost all the industry in Canada, while the Dow Jones industrial average has industry specification for the industrial firms. When compare with Dow Jones, the manufacture IPOs return may be more convincing
2) Using Dow Jones average as a benchmark may tend to bias the results in favour of the return in different countries. But still, we cannot tell which index is more reliable.

4.3.3 Buy-and-hold Method

The buy-and-hold method calculated the wealth relative. Compare with the matching firms (see details in appendix D) return, the results are showed below.

Table 4.3.3 Buy-and-Hold compares differences between IPO firms' return and their peer firms' return.

Market capitalization	IPO number	matching firm number	IPO return	matching firm return	WR
1.00-20.00	7	191	-0.005553529	0.069384583	0.929924077
20.00-50.00	13	132	-0.013923898	0.072571478	0.919357006
50.00-100.00	19	61	-0.032906976	0.057219907	0.914751053
>100.00	47	157	-0.042665772	0.046942054	0.914409947
All (mean)			**-0.023762544**	**0.061529505**	**0.919610521**

We can know from above table that wealth relative is less than 1.00, which can be interpreted as IPOs is underperforming a portfolio of peer firms. In some respects, the findings that there is a tendency for the firms with higher market capitalization perform worse than small firms. DeBondt and Thaler (1985, 1987) have presented evidence that, for those small capitalization stocks, there is a negative relation between past and subsequent abnormal returns on individual securities using holding periods of more than a year. This indicates the market overreaction.

Chapter Ⅴ

Conclusions and Recommendations

5.1 Conclusions

The objective of this paper is to examine the IPO performance of Canada's manufacturing industry is underpriced, overpriced or correctly priced. After providing an empirical research for manufacture firms in Canada, the result shows differently from short run and long run. In the short run, the average abnormal return is 0.009893563 for selected samples in the initial issue period, which means underpriced for those firms but not significantly. It is consistent with the previous theory. In the long run, using two benchmarks in this paper, one is S&P/TSX Composite index which shows the overprice for selected samples, while the other one is Dow Jones Industrial Average index which shows the underprice among those firms. Due to the factor of industrial specification, Dow Jones index may be more convincing. In addition, the result of buy and hold model also shows that the existence of underpricing. We use 3-year monthly return for each firm, thus, the mispricing still exists. However, IPOs should be neither underpriced or overpriced afterwards regarding to the efficient market hypotheses.

5.2 Recommendations

There is no index of specific industry in Canada, for example, industrial index. Therefore, we could not say the Dow Jones industrial average index is a pretty appropriate benchmark for this study. Although buy and hold method using the matching firm's return as a standard to calculate the degree of mispricing, rebalancing still need more exactly benchmarks to adjust the return for each IPO firms.

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Appendix A

Issuer Ticker	Issuer Name	Issue Date	Offer Size (M)	Offer Price	Initial Pub Offer (Shares Offered)
XTX CN	Xantrex Technology Inc	3/19/2004	67.05	18	3725000
XOR CN	X-Ore Resources Inc	12/20/2002	0.996	1000	996
XBC CN	Xebec Adsorption Inc	12/21/2004	15.05	1.75	8600000
WPX CN	Western Potash Corp	5/6/2008	23.0032	1.1	18185000
WMK/H CN	Whitemud Resources Inc	2/28/2007	52.4	8	6250000
WM CN	Wallbridge Mining Co Ltd	7/25/2000	8.73966	1.5	5826440
VNP CN	5N Plus Inc	12/20/2007	66.5154	3	20671800
UWE CN	U308 Corp	12/28/2006	30.25	2.5	11000000
TVK CN	TerraVest Capital Inc	7/9/2004	28.0767	8.15	3255000
TSL CN	Tree Island Steel Ltd	11/12/2002	164.388	10	16438800
TRK-U CN	Canada Cartage Diversified Inc	3/13/2006	124.19	10	11827600
TMA CN	Trimac Transportation Ltd	2/25/2005	90.2851	10	8598590
TL CN	Teal Exploration & Mining Inc	11/15/2005	0.42525	2.25	17800000
TFI CN	TransForce Inc	9/30/2002	117.3	8.5	12000000
TBG CN	Terrabiogen Technologies Inc	2/8/1999	4.95	2.25	2200000
SXP CN	Supremex Inc	3/31/2006	200	10	17500000
SDC CN	Seacliff Construction Corp	4/24/2008	100	13	7692310
SCM CN	Sacre-Coeur Minerals Ltd	11/7/2005	13.2	1.5	8800000
SBR CN	Silver Bear Resources Inc	12/19/2007	32.1	3	10000000
RME CN	Rocky Mountain Dealerships Inc	12/20/2007	74.75	10	6500000
QUX CN	KGHM International Ltd	4/8/2004	144.936	6	24156000
PLS CN	Polaris Minerals Corp	1/9/2006	79.8153	4.8	15628200
PKL CN	PC Gold Inc	5/13/2008	11.5	1	10000000
PBB-U CN	PBB Global Logistics Income Fu	5/15/2002	45	10	4500000
OPM CN	Opta Minerals Inc	2/17/2005	19.8	4	4500000
OGD CN	Orbit Garant Drilling Inc	6/26/2008	60	4	15000000
OFB-U CN	OFI Income Fund	9/1/2005	129.626	10	11784200
NIF-U CN	Noranda Income Fund	5/3/2002	250.5	10	22500000
ND CN	New Dawn Mining Corp	6/13/2008	6.4224	1.8	3334000
NCF-U CN	Norcast Income Fund	6/22/2005	77.025	10	7702500
MUN CN	Mundoro Capital Inc	11/25/2003	11.875	1.25	9500000
MTP CN	Motapa Diamonds Inc	8/17/2004	6	1.25	4800000
MTO CN	Metanor Resources Inc	12/11/2003	3.45	1	3000000
MSV CN	Minco Silver Corp	12/1/2005	1.15	1.25	800000
MCH CN	Mecachrome International Inc	10/12/2007	205.625	14	14687500
LIV-U CN	Livingston International Incom	2/11/2002	151.03	10	15103000
LH CN	Lockerbie & Hole Inc	8/8/2007	150.88	10.25	12800000
INV CN	INV Metals Inc	3/17/2006	25.344	1.2	18500000
IBG CN	IBI Group Inc	8/31/2004	50.258	10	4800000
HNZ/A CN	HNZ Group Inc	9/9/2005	100.78	10	10078000
GWW/H CN	Genesis Worldwide Inc/Canada	7/3/2007	23	2	10000000
GNV CN	Genivar Inc	5/25/2006	110	10	10000000

GIF-U CN	Gienow Windows & Doors Income	10/19/2004	165	10	16500000
GDI CN	General Donlee Canada Inc	5/3/2002	89.47	10	7780000
GBY-U CN	Granby Industries Income Fund	12/16/2004	73.7564	10	7375640
FTP CN	Fortress Paper Ltd	6/28/2007	46	8	5000000
FNV CN	Franco-Nevada Corp	12/3/2007	1258.56	15.2	72000000
FMA/H CN	First Metals Inc	9/1/2006	4.0419	1.1	3674460
FCC CN	Frontera Copper Corp	12/9/2004	60	2	30000000
FBK CN	Fibrek Inc	8/1/2002	444.375	10	41475000
DRX CN	ADF Group Inc	7/21/1999	34.5	8	4312500
DPI-U CN	Drive Products Income Fund	8/25/2006	76.214	10	7000000
DNK CN	Dynetek Industries Ltd	9/21/2000	40	7.5	5333330
DGC CN	Detour Gold Corp	1/31/2007	35	3.5	10000000
DFE CN	0944460 BC Ltd	12/6/2007	100.05	7.25	13800000
CUS CN	Canexus Corp	8/18/2005	317.5	10	30000000
CUM CN	Copper Mountain Mining Corp	6/29/2007	2.0125	1.75	1000000
CSS CN	Contrans Group Inc	7/23/2002	54.0312	9.5	5050000
COP CN	Coro Mining Corp	7/10/2007	13.5	2.25	6000000
CMJ CN	Colombian Mines Corp	4/2/2008	1	1	1000000
CJT CN	Cargojet Inc	6/9/2005	62.5227	10	5954540
CHE-U CN	Chemtrade Logistics Income Fun	7/18/2001	130.169	10	11900000
CG CN	Centerra Gold Inc	6/30/2004	282.238	15.5	16333900
CAO CN	Cadiscor Resources Inc	8/21/2006	4.3	1	4300000
CAO CN	Cadiscor Resources Inc	8/21/2006	2.299	1	4300000
BTO CN	B2Gold Corp	12/6/2007	100	2.5	40000000
BIN CN	Progressive Waste Solutions Lt	4/25/2002	193.218	10	17500000
AXR CN	Alexco Resource Corp	1/26/2006	3	1.5	2000000
AVC CN	American Vanadium Corp	9/24/2007	2.5	1	2500000
ATS-U CN	ATS Andlauer Income Fund	9/30/2005	93.242	10	9324200
ARF CN	Armtec Infrastructure Inc	7/27/2004	90.15	10	9015000
AIN-U CN	Arriscraft International Incom	12/14/2004	66.747	10	6674700
AFN CN	AG Growth International Inc	5/18/2004	74.04	10	6904000
ADN CN	Acadian Timber Corp	1/30/2006	85.9564	10	8450640
9505429Q CN	Peru Copper Inc	10/6/2004	56.5929	1.65	29825000
8766167Q CN	ART Advanced Research Technolo	6/29/2000	16.65	9	1850000
8372702Q CN	Athabasca Potash Inc	12/13/2007	49.5592	4.25	10140000
8161730Q CN	NewWest Gold Corp	8/29/2006	18.105	2.5	7050000
4124028Q CN	Sheffield Resources Ltd	3/11/1999	0.25	10	2500000
3371363Q CN	Vale Canada Ltd	5/11/1999	412.5	27.5	15000000
2294981Q CN	Prefco Enterprises Inc	4/17/2001	2.5	1	2500000
0750327D CN	Scandinavian Minerals Ltd	3/12/2004	4.91625	1.5	2850000
0746636D CN	Comnetix Inc	4/22/2004	7.2	1.8	4000000
0682906D CN	DDI Toronto Corp	9/26/2000	44	10	4400000
0465270D CN	Pan African Mining Corp	7/26/2004	6	1	5000000
0005744D CN	Advanced Fiber Technologies AF	3/28/2002	130.833	10	13083300

Appendix B

The following table shows the data used for calculating the short run performance:

Issuer Ticker	Close price of first trading day	Index close price of first trading day	Index close price before the first trading day
0005744D CN	10.45	7851.47	7835.9
0465270D CN	1	8314.55	8,383.30
0682906D CN	9.7	10478.6	10631
0746636D CN	1.75	8679.98	8573.05
0750327D CN	1.9	8592.04	8503.88
2294981Q CN	1.04	7819.06	7790.46
3371363Q CN	25.3	7010.63	6997.13
4124028Q CN	0.22	6565.75	6572.62
8161730Q CN	2.5	12060.48	12167.35
8372702Q CN	4.55	13747.25	13809.38
8766167Q CN	8.2	10110.98	10231.33
9505429Q CN	1.72	8871.93	8797.05
ADN CN	10	11947.47	11,856.80
AFN CN	10.08	8162.69	8123.5
AIN-U CN	10.15	9086.36	9032.77
ARF CN	10.06	8294.37	8314.55
ATS-U CN	9.85	11011.83	11018.5
AVC CN	1.55	13958.28	13,940.10
AXR CN	1.9	11737.43	11675.16
BIN CN	9.6	7686.29	7713.41
BTO CN	2.4	13849.8	13734.54
CAO CN	0.74	12136.93	12,044.80
CAO CN	0.74	12136.93	12,044.80
CG CN	15.4	8545.58	8498.52
CHE-U CN	10.25	7620.47	7694.13
CJT CN	10.15	9763.44	9707.88
CMJ CN	1.5	13514.14	13440.72
COP CN	2.22	14131.93	14177.52
CSS CN	9.55	6161.08	6366.67
CUM CN	2	13906.57	13715.67
CUS CN	10	10391.3	10500.72
DFE CN	7	13849.8	13734.54
DGC CN	3.69	13034.12	13014.6
DNK CN	7.7	10601	10813.1
DPI-U CN	9.95	12119.83	12132.3
DRX CN	8	7136.35	7154.44
FBK CN	10.9	6550.71	6605.42
FCC CN	1.88	9013.55	9003.74
FMA/H CN	1.1	12145.1	12073.75
FNV CN	15.2	13657.17	13,689.10
FTP CN	8	13715.67	13741.92

GBY-U CN	10.2	9116.64	9106.16
GDI CN	9.95	7663.85	7670.49
GIF-U CN	9.91	8720.53	8788.9
GNV CN	11	11653	11423.91
GWW/H CN	1.98	14064.74	13,906.60
HNZ/A CN	9.63	10898.2	10777.23
IBG CN	10.3	8377.03	8309.04
INV CN	1.22	12000.73	12085.65
LH CN	10.36	13758.19	13560.57
LIV-U CN	10.28	7604.51	7,535.40
MCH CN	13.25	14295.86	14229.44
MSV CN	1.25	10999.64	10824.14
MTO CN	1.1	7956.18	7887.12
MTP CN	1.1	8232.18	8241.49
MUN CN	2.35	7822.34	7850.15
NCF-U CN	9.9	10051.49	9939.2
ND CN	2	14778.46	14602.59
NIF-U CN	9.98	7663.85	7670.49
OFB-U CN	9.8	10813.3	10668.94
OGD CN	3.94	14292.14	14441.13
OPM CN	4	9619.26	9639.59
PBB-U CN	10	7706.98	7716.91
PKL CN	1.05	14616.7	14666.07
PLS CN	4.8	11565.21	11,620.50
QUX CN	5.7	8833.48	8807.59
RME CN	10.05	13407.01	13389.82
SBR CN	2.75	13389.82	13358.07
SCM CN	1.4	10681.18	10,678.70
SDC CN	12.84	13966.33	14069.8
SXP CN	10	12110.61	12206.95
TBG CN	2.2	6583.77	6,633.40
TFI CN	8.4	6180.42	6,111.10
TL CN	2.4	10628.9	10684.72
TMA CN	11.55	9741.37	9657.74
TRK-U CN	10	11906.65	11,833.60
TSL CN	9.76	6329.72	6293.86
TVK CN	8.15	8473.18	8420.38
UWE CN	2.5	12909.54	12852.59
VNP CN	5.6	13407.01	13389.82
WM CN	1.6	10867.07	10783.48
WMK/H CN	7.8	13045.02	13040.11
WPX CN	0.91	14414.3	14274.34
XBC CN	1.74	9237.48	9176.94
XOR CN	0.22	6560.62	6536.97
XTX CN	18.2	8583.81	8555.9

Appendix C

Matching Firm Selection Procedure

To select matching firms for my sample IPOs in 1999 to 2009, firms is selected by following standards:

1) Firms were listed on the Canada's some main exchanges, such as Toronto Stock exchange.
2) We divided sample firms' market capitalization into four levels: 1 million Canadian dollars (CAD) to 20 CAD, 20 CAD to 50 CAD, 50 CAD to 100 CAD, and larger than 100 CAD. Then, select out the firms which is in the same level of market capitalization between the period of 1999 to 2009.
3) Find out each matching firm's stock price for 3 years, and calculate the monthly return.